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Radiation Safety Plan for Georgian Medical Institutions

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The abstract:

In the beginning of May 2012 in Georgia a new Nuclear and Radiation Safety law has been launched. This law established the system of government regulations and duties of radiation sources users who are obliged to get the legal license to work with radiation units. This system includes requirements of new Georgian legislation for radiation medicine, waste management, emergency procedures and other areas and cases.

Keywords: new law, requirements

Introduction

Last decades modern radiation units for medical diagnostics and radiation therapy became very popular. The presence and use of radiation in the open environment requires strict control which is mandated by the government of the country. A licensee must abide the radiation safety rules to keep a level of irradiation of the staff as low as reasonably achievable and avoid unnecessary irradiation of patients. According to the Nuclear and Radiation Safety law, licensee has to take responsibilities on qualification of a medical radiation staff, on patient and staff safety, on waste management, and on emergency responses. All procedures (staff and patient dose calculations, radiation source import-export, waste management, etc...) has to be done in accordance with the hospital guidelines (approved by the Georgian Nuclear and Radiation Safety Authorities) and all limits has to be in compliance with the Georgian and international standards.

Basic Requirements

There are several requirements for safety of Georgian medical staff:

- Only qualified and healthy people are eligible to work with radiation units and periodically they have to update their knowledge.
- During the work the staff must use protection equipment.
- It is necessary to define optimal operation parameters of the machine before it can be used.

- The staff eligible to work with radiation must be over 18 years old and have an appropriate diploma and certificates proved their knowledge.
- Licensee has obligation to conduct annual medical examination of an "A" category workers and to limit from work those people who has medical side effects. In case of recorded incidents (exceeded dose limits) a worker has to undergo an unscheduled medical examination.
- During the pregnancy a worker is free from the immediate contact with radiation.
- For the reason of updating the knowledge of the personnel, Radiation Protection Officer (RPO) has obligation to organize periodical trainings and provide instructions.
- Every radiation unit has to be locked in the bunker, where special security norms are maintained.
- Radiation Protection Officer must observe how the staff adhere the radiation safety rules.

Program of Monitoring

There is also Operation Program of Monitoring that defines controlled and observation zones. On the boarder of controlled zone the effective dose should not exceed 4 mSv/h (when the unit is in working mode), but on the boarder of observation zone it has to be equal to the natural radiation background. Only "A" category personnel can enter in the controlled zone for a limited period of time; but the work in the controlled zone with operating machine is allowed only with special protected aprons. Observation zone is considered for the preparations and both "A" and "B" category personnel can work there. Zones must be visibly isolated.
All personal must wear personal dosimeters (TLDs) which are checked every third months for the "B" category and every month for "A" category personnel. The dosimeter readings are to be recorded in RPO's protocols. Dose limits should be in compliance with international and national standards.

Security of Radiation Sources

Security of radiation sources has to be provided by the RPO and their placement has to be strictly defined in coordination with Georgian Regulatory Authorities. Normally, in Georgia radioactive sources have to be saved in bunker with locked doors which is placed at working territory and guarded for 24 hours. It is prohibited to keep other chemical or explosive compounds in the bunker. A radiation sign must be placed on the door of the bunker and the door key should be kept by the person responsible for radiation and physical protection. Radiation dose on the bunker's wall should not exceed 0.6 mSv/h. Radiation sources must be put in and taken out of bunker only under the supervision of RPO and dates should be recorded in special protocol.

Radiation Emergency Response

Radiation emergency case in the hospital is any kind of damage of the unit (radiation source slip out from the container, breaking down of the machine) which increases the risk of medical and non-

medical injury of personnel. If radiation emergency case is recorded it is a must to give the information to the Georgian Nuclear and Radiation Safety Service immediately. During radiation emergency case RPO will use a dosimeter to define the risk zone and after the alarm everybody must leave the zone except people responsible for Nuclear and Radiation Safety who authorized by the Georgian Regulatory Body. If an accident is serious enough the emergency response is scheduled according to a special plan which should be agreed with the Nuclear and Radiation Safety Service. According to the plan a zone is divided into two parts: internal closed and external limited zones that are also divided according to the dose rate 100 mSv/h.

Only liquidators may to stay in both internal closed and external limited zones. However, liquidators may remain in the internal closed zone only very short period of time in order to implement their work. All liquidators have to prove their participation in the work with their signatures and they must be equipped with electronic dosimeters. The liquidators have to undergo medical examination and make an official report for the Nuclear and Radiation Safety Service in Georgia after they complete the work.

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